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Methods for judging of the Wholesomeness of Drinking Water. By Reuben Haines. (From Journ. Franklin Inst., Feb., 1881. pp. 17. From the author.

Proceedings of the Poughkeepsie Society of Natural Science, from Oct. 1, 1879, to July 1, 1880. 4to, pp. 21. From the society.

Description of two new species of Scopeloid Fishes, *Sudis ringens* and *Myctophum crenulare*, from Santa Barbara channel, California, pp. 8.—

Description of seven new species of Sebastoid Fishes from the Coast of California. pp. 12.—

Description of a new Embiotocid (*Abeona aurora*) from Monterey, California, with notes on a related species. pp. 3.—

Description of a new Flounder (*Platysomatichthys stomias*) from the coast of California. pp. 2.—

Description of a new species of *Paralepis* (*Paralepis coruscans*), from the Straits of Juan de Fuca. pp. 3.—

Description of a new Scorpaenoid Fish (*Sebastichthys proriger*) from Monterey bay, California. pp. 5. By David S. Jordan and Charles H. Gilbert. (From Proc. United States Nat. Mus., 1880.) From the authors.

Note on a new Flat-fish (*Lepidopsetta isolepis*) found in the markets of San Francisco. By W. N. Lockington. (From Proc. U. S. Nat. Mus., 1880.) 1 page. From the author.

Note on a forgotten paper of Dr. Ayres and its bearing on the nomenclature of the Cyprinoid Fishes of the San Francisco markets. By D. S. Jordan. pp. 2. From the author.

Description of a new species of *Icterus* from the West Indies. By Geo. N. Lawrence. (From Proc. U. S. Nat. Mus., 1880.) pp. 1. From the author.

Report on the Marine Isopoda of New England and adjacent waters. By Oscar Harger. (From the Rep. U. S. Com. of Fish and Fisheries for 1878.) pp. 62, plates 13. From the author.

Etude des Mammifères Fossiles de Saint-Gérard le Puy (Allier). Par M. H. Filhol. Pt. I, 1879, Pt. II, 1880. From the author.

Observations sur le Genre *Proailurus*. Par M. H. Filhol. 4to, pp. 46, plates 5. From the author.

Pueblo Pottery. By F. W. Putnam. (From Amer. Art Review, Feb., 1881.) 4to, pp. 4, 1 plate. From the author.

Description of the preparatory stages of *Papilio philenor* Linn. By W. H. Edwards. (Ext. Can. Ent., Jan., 1881.) pp. 9-14. From the author.

Proceedings of the Poughkeepsie Society of Natural Science, from Oct. 1, 1879, to July 1, 1880. pp. 1-21. From the society.

Mittheilungen der Schweizerischen Entomologischen Gesellschaft, Vol. VI, heft no 2. Schaffhausen, 1880.

Contributions to the Anatomy of the milk-weed Butterfly, *Danaus archippus* (Fabr.). By Edward Burgess. (From the Anniversary Memoirs of the Boston Society of Natural History, Boston, 1880.) 4to, pp. 16, pl. I, II. From the author.

First Annual Report of the Board of State Viticultural Commissioners (California). Containing the First Report of the Committee on the Phylloxera, Vine Pests and the Diseases of the Vine. With Appendices A. to J. pp. 1-82. San Francisco, 1881.

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GENERAL NOTES.

BOTANY.¹

A REFORMED SYSTEM OF TERMINOLOGY OF THE REPRODUCTIVE ORGANS OF THE THALLOPHYTES.—At the Swansea meeting of the British Association in August, 1880, Professor A. W. Bennett and

¹ Edited by PROF. C. E. BESSEY, Ames, Iowa.

George Murray, presented a paper bearing the title given above. The following summary is furnished to the NATURALIST, by the authors of the paper:

In the fourth edition of his "Lehrbuch," Sachs defines a "spore" as "a reproductive cell produced directly or indirectly by an act of fertilization," reserving the term "gonidium" for those reproductive cells which are produced without any previous act of impregnation. The practical objections to this limitation of terms are pointed out, and it is proposed to restore the term spore to what has been in the main hitherto its ordinary signification, viz.: *any cell produced by ordinary processes of vegetation and not by a union of sexual elements, which becomes detached for the purpose of direct vegetative reproduction.* The spore may be the result of ordinary cell-division or of free cell formation. In certain cases (zoöspores) its first stage is that of a naked mass of protoplasm; in rare instances it is multicellular, breaking up into a number of cells (polyspores, composed of merispores, or breaking up into sporidia). Throughout thallophytes the term is used in the form of one of numerous compounds expressive of the special character of the organ in the class in question. Thus, in the Protophyta and Mucorini we have chlamydospores; in the Myxomycetes, sporangiospores; in the Peronosporæ, conidiospores; in the Saprolegniæ, Oöphyceæ, and some Zygomycetæ, zoöspores; in the Uredinæ, teleutospores, æcidiospores, uredospores, and sporidia; in the Basidionycetes, basidiospores; in the Ascomycetes (including Lichenes), conidiospores, stylospores, ascospores, polyspores, and merispores; in the Hydrodictyæ, megaspores; in the Desmidiæ, auxospores; in the Volvocinæ and Mesocarpeæ, parthenospores; in the Siphonæ and Botrydiæ, hypnospores; in the Œdogoniaceæ, androspores; in the Floridæ, tetraspores and octospores. The cell in which the spores are formed is in all cases a sporangium.

In the terminology of the male fecundating organs very little change is necessary. The cell or more complicated structure in which the male element is formed is uniformly termed an antheridium, the ciliated fecundating bodies, antherozoids (in preference to "spermatozoids.") In the Floridæ and Lichenes, the fecundating bodies are destitute of vibratile cilia; in the former case they are still usually termed "antherozoids," in the latter "spermata," and their receptacles "spermogonia." In order to mark the difference in structure from true antherozoids, it is proposed to designate these motionless bodies in both cases pollinoids; the term "spermogonium" is altogether unnecessary, the organ being a true antheridium.

A satisfactory terminology of the female reproductive organs presents greater difficulties. The limits placed to the use of the term spore and its compounds require the abandonment of "oöspore" for the fertilized oösphere in its encysted stage anterior

to its segmentation into the embryo. The authors propose the syllable *sperm* as the basis of the various terms applied to all those bodies which are the immediate result of impregnation. It is believed that it will be found to supply the basis of a symmetrical system of terminology which will go far to reduce the confusion that at present meets the student at the outset of his researches. For the unfertilized female protoplasmic mass, it is proposed to retain the term *oosphere*, and to establish from it a corresponding series of terms ending in *sphere*. The entire female organ before fertilization, whether unicellular or multicellular, is designated by a set of terms ending in *gonium*.

In the *Zygomycetes* and *Zygophyceæ*, the conjugated zygospheres, or contents of the zygogonia, constitute a *zygosperm*; in the *Oömycetes* and *Oöphyceæ* the fertilized oosphere, or contents of the oögonium, is an *oöperm*; in the *Carpophyceæ* the fertilized carposphere, or contents of the carpogonium, constitutes a *carposperm*. In this last class the process is complicated, being effected by means of a special female organ which may be called the *trichogonium* (in preference to "*trichogyne*"). The ultimate result of impregnation is the production of a mass of tissue known as the *cystocarp* (or "*sporocarp*"), within which are produced the germinating bodies which must be designated *carpospores*, since they are not the direct results of fertilization. Any one of these bodies which remains in a dormant condition for a time before germinating is a *hypnosperm*. In the *Cormophytes* (*Characeæ*, *Muscineæ*, and vascular cryptogams) the fertilized archesphere, or contents of the archegonium, is an *archesperm*. In the proposed system *zygosperm* will replace Strasburger's "*zygote*," and the "*gametes*" of the same writer will be *zygospheres*, his "*zoögametes*" or "*planogametes*" being *zoözygospheres*.

In the *Basidiomycetes*, *Ascomycetes* and some other classes, it is proposed to substitute the term *fructification* for "*receptacle*" for the entire non-sexual generation which bears the spores.

Modes of Fertilization in Cryptogams.

ZYGOSPERMEÆ.	Zygogonia, containing Zygospheres, producing after fertilization a ZygospERM.	
	<i>Male Organ.</i>	<i>Female Organ.</i>
OOSPERMEÆ.	Antheridium, containing Antherozoids or Pollinoids.	Oogonium, containing Oosphere, producing after fertilization an Oosperm.
CARPOSPERMEÆ.	Antheridium, containing Antherozoids or Pollinoids.	Carpogonium, containing Carposphere, producing after fertilization a Carposperm.
CORMOPHYTA.	Antheridium, containing Antherozoids.	Archegonium, containing Archesphere, producing after fertilization an Archesperm.

Reproductive Organs of Thallophytes.

	<i>Non-sexual.</i>
PROTOPHYTA.	Chlamydospore.
	Sporangium.

	<i>Female.</i>	<i>Non-sexual.</i>
MYXOMYCETES.		Zoospore. Sporangiospore.
MUCORINI.	Zygogonium. Zygosphere. ZygospERM.	Chlamydospore. Sporangiospore.
PERONOSPOREÆ.	{ Oogonium. Oosphere. OöspERM.	Sporangium. Conidiospore. Zoospore.
SAPROLEGNIEÆ.		Zoospore.
UREDINEÆ.		Teleutospore. Æcidiospore. Uredospore. Sporidium.
	{ Carpogonium. Carposphere. CarpospERM.	
USTILAGINEÆ.		Teleutospore. Sporidium.
BASIDIOMYCETES.		Basidiospore. Sterigma. Basidium.
ASCOMYCETES, including LICHENES.	Trichogonium.	Conidiospore. Stylospore. Ascospore. Polyspore. Merispore.
ZYGOPHYCEÆ.	Zygogonium. Zygosphere. Zoözygosphere. ZygospERM. Hypnosperm (Hydrodictyææ, Zygnemacææ).	Zoospore. Megazoospore (Hydrodictyææ). Auxospore (Diatomacææ). Hypnosporangium } Botrydiææ. HypnosporE } Parthenospore (Mesocarpeææ).
OOPHYCEÆ.	Oogonium. Oö-sphere. OöspERM. Conceptacle. Hypnosperm.	Zoospore. Parthenospore (Volvocinææ). Androspore (Edogoniacææ). HypnosporE (Siphonææ).
CARPOPHYCEÆ.	Carpogonium. Carposphere. CarpospERM. Trichogonium. Trichophore. Cystocarp.	Zoösporangium. Tetraspore. Octospore. Carpospore.

CURTISS' "NORTH AMERICAN PLANTS."—As is well known to many readers of the NATURALIST, Mr. A. H. Curtiss, of Jacksonville, Florida, has for several years been engaged in issuing annual fascicles of the more interesting North American plants, particularly of the southern species. Fascicle No. IV has just appeared, and, like its predecessors, it consists of beautifully preserved specimens. In turning over the numbers there is scarcely an inferior specimen to be found, and not one *poor* one.

The species are distributed quite evenly throughout the phanerogamia, and there are, besides, a few vascular cryptogams.

Many of the species are peculiar to South Florida, and will be valuable acquisitions to many herbaria. Quite a number of Texan species are represented by specimens collected by Mr. J. Reverchon. Among the species which will be interesting to many northern botanists may be mentioned *Vitis sicyoides* Benth. and Hook., a curious member of the *Cissus* sub-genus, and not at all grape-like in appearance; *Acer saccharinum* Wang. var *Floridanum* Chap., with its petite leaves and fruits; *Strumpfia maritima* Jacq., which has twigs and foliage with a decidedly coniferous look; *Garberia fruticosa* Gray; *Mimusops Sieberi* A. DC.; *Facquinia armillaris* Jacq.; *Thrinax Garberi* Chap.; *Monanthochloë littoralis* Eng.

THE FUNCTION OF LICHEN GONIDIA.—George Murray, in the *Journal of the Linnean Society*, for October, attempts to apply the results of Pringsheim's recent researches on chlorophyll to the life of the lichen. The new view as to the function of chlorophyll is that instead of being the active agent in the decomposition of CO_2 , it discharges the office of a screen to the protoplasm, which itself is the decomposing agent. Mr. Murray suggests that in lichens we have an experimental proof of the truth of this theory. "We have the lichen, the fungal tissues, as the body of the thallus, and the chlorophyll screen, in the gonidial layer; that is, the chlorophyll is in one system of cells and the protoplasm apparently affected by it in another, which is in contact. The light which traverses the chlorophyll-containing gonidial layer excites in the fungal tissues the decomposition of CO_2 . In evidence of this I would point to the plentiful occurrence of starch, or rather lichenin, a substance of the same chemical composition as starch ($\text{C}_{12}\text{H}_{20}\text{O}_{10}$), and formed from it according to Masche (*Four. Prakt. Chemie*, LXI, p. 7), by the action of the free acids of the plant. Further, I venture to submit that this process tends to explain the nature of the consortism of the fungal and algal elements in the autonomous lichen, and to support the well-known views of Schwendener."

SETS OF NORTH AMERICAN FUNGI.—It is impossible for the student of fungi to make much progress in the identification of species without having access to collections of authentic and well mounted specimens. In 1878, Mr. J. B. Ellis, of Newfield, N. J., began the distribution of his sets of "North American Fungi," and has continued the work with such rapidity that up to the present no less than five hundred species have been prepared and issued by him. Century v, sent out during January of this year, is a valuable one to the fungologist. Nearly all the orders of fungi are represented by species, there being of the Calcareæ (Myxomycetes) 1; of the Perisporiaceæ 9; the Helvellaceæ 22; Phacidiaceæ 11; Pyrenomycetes 35; Hymenomycetes 11; and of imperfect forms (probably of some Ascomycetes) 11. The

specimens are in generous quantity for each species, and in most cases are put up loosely in envelopes pasted to the pages, thus making them doubly valuable for microscopical study.

PINUS BANKSIANA LAMB., ON THE SEA COAST OF MAINE—Mr. C. G. Atkins, of Bucksport, Me., reports finding trees of this species in Orland, Hancock county, Me., and also in Washington county, near Harrington. The same tree was reported to him as growing on Cape Rosier, Schoodic point, and Beal's island. This pine has hitherto been catalogued as confined to "the northern borders" of Maine.

In this connection it may be well to point out that Professor Babcock in his "Flora of Chicago and Vicinity" (*The Lens*, 1872), records this species as being "abundant for several miles along the L. S. & M. S. R. R.," near the city; a locality not noted in our books and catalogues.

BENTHAM'S NEW CLASSIFICATION OF THE ORCHIDS.—At the meeting of the Linnean Society, Jan. 20, 1881, Bentham presented an important paper embodying the results of his detailed examination of all the genera proposed or established. He re-arranges them under five tribes and twenty-seven sub-tribes, as follows:

Tribe I. EPIDENDRÆÆ.		Tribe II. VANDEÆ.	
Sub-tribe 1.	Pleurothallææ.	Sub-tribe 1.	Eulophiææ.
" 2.	Microstyleæ.	" 2.	Cymbidiææ.
" 3.	Lipariææ.	" 3.	Cyrtopodiææ.
" 4.	Dendrobiææ.	" 4.	Stanhopieæ.
" 5.	Eriææ.	" 5.	Maxillariææ.
" 6.	Bletieæ.	" 6.	Oncidiææ.
" 7.	Coelogyneæ.	" 7.	Sarcantheæ.
" 8.	Stenoglosseæ.	" 8.	Notyleæ.
" 9.	Lælieæ.		
Tribe III. NEOTTIEÆ.		Tribe IV. OPHRYDEÆ.	
Sub-tribe 1.	Vanilleæ.	Sub-tribe 1.	Serapiadeæ.
" 2.	Corymbiææ.	" 2.	Habenariææ.
" 3.	Spirantheæ.	" 3.	Diseæ.
" 4.	Diurideæ.	" 4.	Coryciææ.
" 5.	Arethuseæ.		
" 6.	Limodoreæ.		
Tribe V. CYPRIPEDEÆ.			

BOTANICAL NEWS.—Mr. D. L. James has published in the Journal of the Cincinnati Society of Natural History (January, 1881), a valuable paper entitled "Notices of the Floras of Cincinnati, published from 1815 to 1879," in which he enumerates and comments upon the published lists, four in number.—Dr. Killebrew, the Commissioner of Agriculture of the State of Tennessee, has recently issued from his office a pamphlet of 164 pages on "Meadows and Pastures." The general treatment of the subject is much like that followed in Flint's "Grasses and Forage Plants," but it is much simplified so as to be more easily read by those who are not botanists. It is a valuable little work, and although not written for botanists, will prove interesting to

them also.—Dr. Vines in the January *Journal of Botany* publishes a "History of the Scorpioid Cyme." The term has been used in two senses, resulting in considerable confusion; in the one sense it is made to include the helicoid cyme, while in the other the scorpioid and helicoid cymes are distinct. The latter which appears to be the best usage is, in the books used in this country, followed in Gray's Botanical Text Book, 6th edition; Bessey's Botany for High Schools and Colleges; Prantl's Text Book of Botany; McNab's Botany and Sach's Text Book of Botany. The erroneous usage is followed in Wood's Class Book of Botany; Wood's Botanist and Florist; Thome's Structural and Physiological Botany; Youman's Second Book of Botany; and the old edition of Gray's Botanical Text Book. In Dr. Vines' paper by an unfortunate printer's blunder, Figs. 1 and 2 are transposed.—An important work on the Morphology of the Florideæ by Agardh, has recently been published in Leipsic.—Dr. Kuntze has been studying the "Gulf Weed" (*Sargassum bacciferum*), and finds that there are several species, instead of but one, as has commonly been supposed. His results are given in his recently published treatise, *Revision von Sargassum und das sogenannte Sargasso-Meer.* Leipsic, 1880.—Borzi describes a new Sardinian species of oak (*Quercus Morisii*) in the January number of *Nuovo Giornale Botanico Italiano*. It is apparently much like our Californian *Quercus agrifolia*.—In the January Bulletin of the Torrey Botanical Club, Francis Wille describes, and figures twelve new species of North American desmids. —The editors of the *Botanical Gazette* began in the February number, the issue in a four page extra of a catalogue of the plants of Indiana —From experiments made under the direction of Professor Hilgard upon the grounds of the University of California "it seems evident," to quote the words of the report, "that there must exist localities in California with winters warm enough for the three more hardy kinds of Cinchona (*C. succirubra*, *C. officinalis*, and *C. condaminea*). In the same report the date palm (*Phoenix dactylifera*) is said to be "even as a young seedling, perfectly hardy" upon the University grounds.—"The Plants of the Summit of Mt. Marcy" is the title of an interesting pamphlet by C. H. Peck, the State Botanist of New York, reprinted from the Seventh Report of the Adirondack Survey. Upon the open summit 137 species were found, distributed as follows; algæ, 1; fungi, 7; lichens, 31; hepaticæ, 10; mosses, 32; lycopods, 3; gymnosperms, 3; angiosperms, 50.—Thomas Meehan has recently reprinted in the *Gardener's Monthly*, and in pamphlet form, his paper on the Objects of Sex, and of Odor in Flowers, read before the A. A. A. S. at Saratoga, 1879.—J. G. Baker's "Synopsis of the Aloineæ and Yuccoideæ," fills ninety-three pages of the October and December numbers of the *Journal of the Linnean Society*. It contains full descriptions of all the spe-

cies.—Dr. E. L. Sturtevant of South Framingham, Mass., has undertaken an investigation involving the ratios between the weight of fruits and their contained seeds; the number of perfect, shriveled and abortive seeds, etc. He has printed blanks which he asks observers in different parts of the country to fill and forward to him.—Uhlworm's *Botanisches Centralblatt* for 1881, fully sustains its high character. The promptness of its notices of botanical publications and papers is a source of wonder as well as of profit to its readers.—Botanists will be glad to learn that Centuries v and vi, of Ravenel's "Fungi Americani" are now nearly ready for distribution.

ZOOLOGY.

VALUE OF THE HOUSE WREN AS AN INSECT DESTROYER.—Ornithologists and entomologists are always most properly and sensibly urging upon people the duty and necessity of protecting the birds. In fact, when any destructive insect appears in overwhelming numbers, the good offices of our feathered friends would seem to be almost our sole dependence for protection from their ravages. And yet our laws and usages are singularly defective, regarded simply from a selfish point of view—leaving humanity entirely out of the question. But the matter is constantly forcing itself upon public attention, and gradually we shall make laws which ought to have been upon our statute books from the foundation of the Government. In the meantime let us all, who have this subject at heart, keep on "preaching" until this glorious end is achieved. The observations I have been able to make during a residence of several years on a farm have convinced me that the common house wren is really one of our most valuable birds, not, perhaps, for what they have done, but from the possibilities wrapped up in their diminutive bodies. They are quite as social as the purple martin or the bluebird, and greatly surpass both of these in the rapidity with which they increase. I began several years ago to provide them with nesting-places in the vicinity of my buildings. Sometimes I fastened the skull of a horse or ox, or a small box, in a tree-top. But latterly I have made it a practice every spring to obtain thirty or forty cigar boxes for this purpose. If the box is long and large, I put a partition across the middle and make a hole through into each apartment. It is very seldom that these boxes are not occupied by one of these little families. In most instances two broods are annually reared in each nesting-place. One of my boxes last season turned out three broods of young wrens—six little hungry birds each time, or eighteen in all! I think a cigar box never before did better duty. The lamented Robert Kennicott stated that a single pair of wrens carried to their young about a thousand insects in a single day! Like all young, rapidly growing birds, they are known to be most voracious eaters, living entirely upon insects.